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Per our discussion, here is a proposed draft office action response for our telephone conversation to be scheduled for December 4, 2008 at 9:00 a.m.

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Application No.: 10/722,987
Office Action Dated: September 4, 2008

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Leonard Ciprian Mosescu
Application No.: 10/722,987
Filing Date: November 26, 2003
For: **EFFICIENT STRING SEARCHES USING NUMERIC KEYPAD**

Confirmation No.: 9026
Group Art Unit: 2162
Examiner: Giovanna B. Colan

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REPLY PURSUANT TO 37 CFR § 1.116

In response to the Official Action dated September 4, 2008, reconsideration is respectfully requested in view of the amendments and/or remarks as indicated below:

- ☐ **Amendments to the Specification** begin on page _____ of this paper.
- ☒ **Amendments to the Claims** are reflected in the listing of the claims which begins on page 2 of this paper.
- ☐ **Amendments to the Drawings** begin on page _____ of this paper and include an attached replacement sheet.
- ☒ **Remarks** begin on page 8 of this paper.

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This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for searching using a limited input keypad to search for data contained in an electronic device, the limited input keypad comprising a plurality of keys, each of which is an alphanumeric key that is identifiable by a unique number and a corresponding subset of an alphabet, the method comprising:

storing a plurality of first-character text strings and a corresponding second-character plurality of numeric strings, wherein each of the plurality of numeric strings is formed by matching each individual letter contained in a text string with a corresponding number located on the same alphanumeric key;

receiving a first portion of a query via activation of a first alphanumeric key by a user of the limited input keypad; and

searching the stored character plurality of numeric strings for identifying a first numeric string having in a first position, a first number that corresponds to the unique number on the activated first alphanumeric key;

responsive to the query by receiving a character second portion of the query via activation of a second alphanumeric key by the user of the limited input keypad; [(,)] appending said character to previously received characters if any;

performing a prefix further search on the plurality of numeric strings for identifying a second numeric string having in the first position, the first number that corresponds to the unique number on the activated first alphanumeric key, and in an adjacent position, a second number that corresponds to the unique number on the activated second alphanumeric key; and

using the identified second numeric string to identify the corresponding text string associated with the identified second numeric string, and use the identified corresponding text string to provide to the user, data contained in the electronic device,

of received characters on the stored second-character strings, and returning a set of first character strings stored with the second character strings that match the prefix search, wherein receiving the character comprises receiving input from an input device, and determining the

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~~character from a set of characters that corresponds to the received input, further wherein the input device comprises a keypad having at least one alphanumeric key associated with a unique number and a unique subset of an alphabet.~~

2-5. (Cancelled)

6. (Currently amended) The method of claim [[4]] 1, further comprising storing the ~~mapping~~ plurality of text strings and the corresponding plurality of numeric strings as a table.

7. (Currently amended) The method of claim 6, wherein the storing as a table comprises:
storing each of the ~~characters in the second set of characters~~ plurality of text strings in a respective ~~row~~ rows in a first column of the table; and
storing ~~an associated subset of characters of the first set of characters~~ each of the corresponding plurality of numeric strings in a corresponding respective ~~row~~ rows in a second column of the table.

8-24. (Cancelled)

25. (Currently amended) A data searching system, comprising:
an input device for receiving a query through a limited input keypad comprising a plurality of keys, each of which is an alphanumeric key identifiable by a unique number and a corresponding subset of an alphabet;
a storage device for storing a plurality of ~~first character~~ text strings and a corresponding ~~second character~~ plurality of numeric strings; wherein each of the ~~second character~~ plurality of numeric strings is a ~~number associated with a corresponding alphanumeric key on the keypad of the input device, and each of the first character strings corresponds to a unique subset of an alphabet associated with the corresponding~~ formed by matching each individual letter contained in a text string with a corresponding number located on the same alphanumeric key;

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a display device for displaying a ~~set of character strings~~ search result comprising data associated with at least one of the plurality of text strings; and

a processor ~~for searching the stored character strings~~ responsive to the ~~a query that is initiated by activation of a first alphanumeric key,~~ by ~~receiving a character,~~ appending said character to previously received characters if any, performing a prefix search of ~~received~~ characters on the stored ~~second character~~ plurality of numeric strings, and providing to the display, ~~the search result,~~ a set of character strings after detecting a first numeric string that contains the unique number of the activated first alphanumeric key in a first position of the first numeric string, and identifying therefrom, a corresponding text string corresponding to the first numeric string, stored with the second character strings that match the prefix search.

26-29. (Canceled)

30. (Currently amended) The system of claim ~~28~~ 25, wherein the storage device comprises a table for storing ~~the a mapping between the plurality of text strings and the corresponding plurality of numeric strings.~~

31. (Currently amended) The system of claim 30, wherein the table comprises:
a ~~respective row~~ rows in a first column of the table for storing each of the ~~characters in the second set of characters~~ plurality of text strings; and
a ~~respective row~~ corresponding rows in a second column of the table for storing an associated subset of characters ~~of the first set of characters~~ each of the plurality of numeric strings.

32-36. (Cancelled)

37. (Withdrawn – Currently amended) A method ~~of to search for data contained in an~~ electronic device by recognizing a string of letters wherein each letter contained in the string of letters is inputtable into the electronic device via ~~alphabets entered into a limited input~~

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keypad, the limited input keypad comprising at least one alphanumeric key that combinedly represents a unique number and a plurality of alphabets corresponding subset of an alphabet, the method comprising:

populating a lookup table by mapping the string of alphabets letters to a string of numbers, the mapping comprising:

identifying depression of a first alphanumeric key on the keypad, wherein the first alphanumeric key is selected to correspond to a first alphabet letter in the string of alphabets letters;

storing a first number that is the same as the unique number associated with the first alphanumeric key;

identifying depression of a second alphanumeric key on the keypad, wherein the second alphanumeric key is selected to correspond to a second alphabet letter in the string of alphabets letters; and

storing a second number that is the same as the unique number associated with the second alphanumeric key, wherein the second number is stored along with the first number, and wherein the combination of the first and second numbers comprises the string of numbers that enables a subsequent number search for recognizing a subsequent entry of the string of letters via the limited input keypad, and locating thereon, data associated with the recognized string of letters, that corresponds to the string of alphabets.

38. (Withdrawn – Currently amended) The method of claim 37, further comprising:
- completing the mapping by storing each of the numbers corresponding to each of the alphabets letters in the string of alphabets letters; and
- using the lookup table for recognizing a subsequent entry of the string of alphabets letters into the limited input keypad, the recognizing comprising:
- identifying subsequent depression of the first alphanumeric key on the keypad;
- searching the lookup table to locate the first number associated with the first alphanumeric key;

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- identifying subsequent depression of the second alphanumeric key on the keypad;
searching the lookup table to locate the second number associated with the second alphanumeric key; and
recognizing from the combination of first and second numbers, the combination of the first and second ~~alphabets~~ letters that comprise the string of ~~alphabets~~ letters.
39. (Withdrawn – Currently amended) The method of claim 38, further comprising:
displaying the combination of the first and second ~~alphabets~~ letters to indicate the presence of a potential match in the lookup table.
40. (Withdrawn – Currently amended) The method of claim 39, further comprising:
displaying all ~~alphabets~~ letters in the string of ~~alphabets~~ letters upon recognizing an exact match in the string of numbers contained in the lookup table.
41. (Withdrawn – Currently amended) The method of claim 38, further comprising:
populating the lookup table by mapping a plurality of additional ~~alphabet~~ letter strings to a corresponding plurality of additional number strings.
42. (Withdrawn – Currently amended) The method of claim 41, further comprising:
displaying at least one ~~alphabet~~ letter from one of the additional ~~alphabet~~ letter strings as a potential match during the subsequent entry of the string of ~~alphabet~~ letter into the limited input keypad.
43. (Withdrawn) The method of claim 41, further comprising:
displaying duplicate matches that exist in the lookup table.
44. (New) The method of claim 1, wherein the identified second numeric string is the same as the first numeric string.

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45. (New) The method of claim 44, wherein the identified second numeric string is a name of a contact stored in the electronic device.
46. (New) The method of claim 45, wherein the data associated with the name of the contact comprises at least one of a) a phone number, and b) an address.
47. (New) The method of claim 6, wherein the plurality of text strings corresponds to names of a contact list stored in the electronic device, and the data associated with each of the names is stored together with the names in the table.
48. (New) The system of claim 25, wherein the processor is further responsive to activation of a second alphanumeric key, by performing a further search on the stored plurality of numeric strings for detecting a second numeric string that contains the unique number of the activated second alphanumeric key in a second position adjacent to the first position in the second numeric string.
49. (New) The system of claim 48, wherein the detected second numeric string is the same as the detected first numeric string.
50. (New) The system of claim 48, wherein the identified second numeric string is a name of a contact stored in the electronic device.
51. (New) The system of claim 50, wherein the data associated with the name of the contact comprises at least one of a) a phone number, and b) an address.
52. (New) The system of claim 51, wherein the plurality of text strings corresponds to names of a contact list stored in the electronic device, and the data associated with each of the names is stored together with the names in the table.

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REMARKS

This is a full and timely response to the non-final Office Action mailed September 4, 2008. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Present Status of Patent Application

Claims 1, 6, 7, 25, 30, 31, and 44-52 are now pending in the present application. Of these pending claims, claims 1, 6, 7, 25, 30, and 31 are currently amended without introduction of new matter; claims 2-5, 8-24, 26-29, and 32-36 are canceled; and claims 44-52 are new claims being submitted without introduction of new matter. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Withdrawal of claims 37-43 in current Office action

The Office has withdrawn Applicant's claims 37-43 that were submitted as new claims in Applicant's response dated 11 June 2008. In providing a reason for the withdrawal, the Office action asserts that claims 37-43 are drawn to "*pattern matching*" whereas originally presented (and examined) claims were drawn to "*query processing (searching)*."

In response thereto, Applicant hereby submits claim amendments to withdrawn claims 37-42 (suitably identified as "Withdrawn – Currently amended") that are directed to bringing these claims in line with originally submitted claims, vis-à-vis "*query processing (searching)*."

Consequently, in light of these amendments, Applicant respectfully requests that the withdrawal of these claims be rescinded and examination carried out upon these claims as well as other pending claims.

Claim Rejections under 35 U.S.C. §103

Statement of the Rejection

Claims 1-7, 10-12, 25-32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green (US Patent App. Pub. No. 2002/0129012 A1, published: September 12,

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2002), in view of *Beach et al.* (*Beach hereinafter*) (US 2003/0014753 A1), and further in view of *Peter J. Tsakanikas* (*Tsakanikas hereinafter*) (US 4,427,848).

Response to the Rejection

Claim 1

The Office action refutes Applicant's remarks submitted in Applicant's response dated 11 June 2008. Applicant does not agree with several assertions made in this regard. However, in the interests of moving forward prosecution in the case, Applicant has opted to currently amend claim 1 and respectfully asserts that the cited prior art, individually and/or in combination fails to reasonably teach or disclose various portions of the amended claim.

For example, a first of such portions of amended claim 1, cites: "*a plurality of text strings and a corresponding plurality of numeric strings, wherein each of the plurality of numeric strings is formed by matching each individual letter contained in a text string with a corresponding number located on the same alphanumeric key.*"

This aspect has been described by Applicant in his original specification, for example in his paragraph [0046], which teaches: "*An example embodying steps 510-560 is further illustrated in Figure 6. In this example, each character in "Steven" may be looked up in table 300 to find the corresponding key on keypad 200. In this example, 'S' corresponds to key 7 on keypad 200, 'T' corresponds to key 8 on keypad 200, 'E' corresponds to key 3 on keypad 200, 'V' corresponds to key 8 on keypad 200, 'E' corresponds to key 3 on keypad 200, and 'N' corresponds to key 6 on keypad 200. String B may then be computed by appending the resulting characters together. The resulting value of String B is "783836".*"

The cited combination of references fails to suggest or teach this and other portions of the claim. In this regard, it may be pertinent to draw attention to the cited reference of Green, which discloses a lexicon. Green's lexicon is distinctly different from Applicant's text strings and numeric strings that are recited in amended claim 1 and taught in Applicant's paragraph [0046] reproduced above. A relevant portion of Green's paragraph [0031] is reproduced below for ease of reference.

[0031] ... Referring to FIG. 4, it will be noted that each entry in column one of the word look-up table 24 identifies a specific starting character and a specific word length.

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Corresponding entries in columns two and three identify lower and upper bounds, respectively, for a range of consecutive word numbers whose associated words begin with the specified character and conform to the specified word length. For example, the character-length value "a2" in column one identifies a set of two-character words that begin with the letter "a." The corresponding entries in columns two and three define the associated word number range 2 to 2, which identifies a single-member set consisting of the word "as." For the character-length entry "s3", the word look-up table 24 identifies consecutive word numbers 16-18 which identify a three-member set consisting of the words "sam", "sun" and "set."

Combining Green with the other references does not reasonably result in Applicant's "matching each individual letter contained in a text string with a corresponding number located on the same alphanumeric key." Furthermore, the cited combination of references, individually and/or combinedly, fails to teach or suggest certain search aspects that are included in amended claim 1.

Applicant's search aspects of claim 1 are directed towards searching numeric strings in order to provide a faster search for text. In this matter, it may be pertinent to draw attention to Applicant's paragraph [0048], which discloses: "*It is appreciated that saving "783836", along with the name "Steven" will allow the user to quickly retrieve the record later by prefix searching on the value of the key pressed, rather than multiple prefix searches using the set of characters the key represents*" (emphasis added). Applicant's efficient search process is in contrast to prior art searches as taught by Tsakanikas and described in Applicant's Background section (paragraph [0002] for example).

In light of the remarks above, Applicant respectfully submits that amended claim 1 is allowable over the cited references and hereby request withdrawal of the rejection followed by allowance of the claim.

Claims 2-5 and 10-12

Applicant has currently canceled claims 2-5 and 10-12 and respectfully submits that the rejection of these claims has been rendered moot as a result of the cancellation.

Claims 6 and 7

Applicant respectfully submits that independent claim 1 is allowable for at least the reasons cited above. Consequently, claims 6 and 7 that are dependent directly or indirectly on

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claim 1 are also allowable as a matter of law. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Applicant hereby requests withdrawal of the rejection followed by allowance of claims 6 and 7.

Claim 25

In contrast to claim 1, which is a method claim, Applicant's claim 25 is a system claim. Consequently, the scope of these two claims is distinct and different. However, certain remarks made above with reference to the rejection of claim 1 are equally pertinent to the rejection of claim 25 as well. In the interests of brevity, these remarks will not be repeated herein and Applicant respectfully submits that claim 25 is also allowable at least in currently amended form. Consequently, Applicant requests withdrawal of the rejection followed by allowance of the claim.

Claims 26-29, 32, and 34-36

Applicant has currently canceled claims 26-29, 32, and 34-36 and respectfully submits that the rejection of these claims has been rendered moot as a result of the cancellation.

Claims 30 and 31

Applicant respectfully submits that independent claim 25 is allowable for at least the reasons cited above. Consequently, claims 30 and 31 that are dependent directly or indirectly on claim 25 are also allowable as a matter of law. Applicant hereby requests withdrawal of the rejection followed by allowance of these claims.

Cited Art Made of Record

The cited art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

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CONCLUSION

Applicant respectfully submits that pending claims 1, 6, 7, 25, 30, 31, and 44-52 are allowable. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned representative at (215) 568-3100.

Date: March 12, 2008

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